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CONSCIOUSNESS AT THE INTERFACE: WENDT, EASTERN WISDOM AND THE ETHICS OF INTRA-ACTION

ABSTRACT: *Drawing on the family resemblance between quantum physics and Eastern wisdom identified by Niels Bohr, this article brings insights from Buddhism and Daoism to the task of enhancing our understanding of the significance of Alexander Wendt's argument for a quantum-based social science. Five areas of overlap between his argument and Eastern wisdom are explored: vitalism and the idea that life goes "all the way down"; the dependence of consciousness on both subjectivity and relationality; the ethical significance of language; the notion of "changing the past": and the importance of leaders. The family resemblances between Wendt's perspective and those available in Daoism and Buddhism are remarkable.*

Keywords: *Buddhism, Daoism, entanglement, vitalism, Alexander Wendt, Ludwig Wittgenstein.*

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At first glance, *Quantum Mind and Social Science: Unifying Physical and Social Ontology* (Cambridge, 2015), is likely to seem strange and inaccessible to many social scientists, most of whom are likely to have only basic training in physics. Like them, I have no special expertise that would give me privileged access to the scientific arguments that underpin Wendt's argument. Instead, my research on Buddhism has attuned me to the family resemblances, first identified by Niels Bohr, between quantum physics and Eastern wisdom.[1] Family resemblance is not the same as identical, particularly considering the diversity of schools associated with both quantum theory and Eastern wisdom. But this imperfect match makes it possible to appreciate the significance of Wendt's argument for ethics and compassion, which are not a central concern of his book but are of crucial importance.

In what follows, I explore several key points from *Quantum Mind* and, in the process, attempt to articulate what they might mean for the analysis and the experience of social and political phenomena. I draw on Buddhist and Daoist insights

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[11] In identifying the family resemblance between quantum physics and Eastern wisdom, Bohr (1961[2010]: 20) wrote:

> For a parallel to the lesson of atomic theory . . . we must in fact turn . . . to that kind of epistemological problem with which already thinkers like Buddha and Lao Tzu have been confronted, when trying to harmonize our position as spectators and actors in the great drama of existence.

Bohr's concept of complementarity highlights a question of how both a wave and a particle can exist in these forms but never in both at the same time.

as a guide while, where possible, relegating the sources and specifics to the end notes.[2] I start with Wendt's discussion of *vitalism and organism*, and why they matter even at the most complex levels of social organization. The second point regards the dependence of consciousness on both *subjectivity and relationality*. The third reflects on the ethical significance of Wendt's argument about *language*. The fourth explores his notion of "changing the past," while raising questions about forms of *non-locality* beyond language. Finally, I look at his argument about the importance of *leaders*, as well as the implications of his overall argument for how we understand social science.

It is impossible in this short space to do justice to the very dense and rich argument of *Quantum Mind*. My hope is to give the scientific argument a more human face while providing something of a compass for navigating its game-changing insights.

Vitalism

While vitalism is not the point of departure for Wendt's book, it seems a useful place to start, as the life-force is the foundation of Wendt's argument about consciousness. Wendt argues, contrary to conventional wisdom, that human social life is not essentially different from the activity of sub-atomic particles. He rests his argument on a "kind of vitalism, according to which life is constituted by an unobservable, non-material life force or *elan vital*" (131). Life goes all the way down.

[2] The principle of complementarity, or the impossibility of combining exclusive features, was put forward by Bohr as the first principle of interpretation (Omnes 1999, 153). While Wendt claims that the concept could resolve the controversy between positivists and interpretivists (34), and highlights this as one contribution of the book, there is little sustained discussion of it, perhaps because of his focus on ontology, as distinct from epistemology. By contrast, Bohr's principle is said, by others, to have "provoked the equivalent of an epistemological earthquake, a true reversal in the order of knowledge" (Omnes 1999, xxi).

The duality that arises from an organism's interactions with its environment is central to life. On the one hand, quantum coherence requires that an organism be shielded from its environment in order to prevent the permanent collapse of its wave functions, which suggests the importance of boundaries. On the other hand, organisms also require energy and thus an open system that makes it possible to perceive what is outside itself and interact with it. Organisms are autopoietic, which means that they feed on energy to sustain their self-production in the face of thermodynamic decay (134). Consciousness, Wendt argues, is at the interface between inside and outside, and is "the subjective manifestation of wave function collapse in the moment" (139). The *elan vital* provides a basis for addressing the "hard problem" that we can't get to consciousness from a purely material standpoint.

The notion of a life force allows us to entertain the possibility that consciousness is present in the "deep structure of matter" (111). This reverses the classical assumption that materiality is prior to consciousness. Consciousness provides the basis upon which not only humans but all organisms act (141). For example, the tendency of wave functions to collapse around patterns of past activity, which draw an organism toward some potentials rather than others, is dependent on memory, the accumulation of processed information, which thus gives an appearance of certainty and stability to what is ultimately an uncertain and indeterminate quantum world.

If life goes all the way down, what does it look like in practice? A small thought experiment may be useful for setting the stage. Start by imagining the single organism, a cell, for instance, in its larger context. Now from that image, zoom out to the notorious image on the cover of Hobbes's *Leviathan*. (For a moment, forget about the book's message that life is a "war of all against all," a claim grounded in a materialist metaphysics.) The Leviathan is represented as a composite of the people of a state, who make up its body in the cover illustration. We could zoom out farther and see the relationship between multiple Leviathans

(the state organisms that constitute the international system) embedded in a larger natural environment. In a more contemporary context we might see also the "superpositioning" of international institutions. Then zoom back in to see any one of the individual bodies who comprise the social organism, and zoom in farther to see the cells comprising it, then farther to the composition of the individual cells, and then to the genes embedded in the cell, which connect to past generations. Now allow the borders (the quantum coherence) to fade into the background, including those separating the Leviathan from its environment, or any individual from its larger context. What is left is layers of entangled life.

While it is tempting to think about these relationships in terms of levels of analysis, Wendt suggests that they are instead holographic. In a hologram, information that generates the whole is encoded in each pixel, such that the whole is present in each (271). In a holographic universe, wholes are constituted from parts, which are themselves wholes which are constituted of parts, and so on and so on. This imaging shifts the central question away from the relationship between the sub-atomic level and everything above it, to the question of whether a relationship between mind and matter, energy and particle, and one entity and another, exists "all the way down." Life requires boundaries that distinguish the internal processes of organisms from the energy that they receive from their environment. Yet life is entangled with other life all the way down.

Wendt confines himself to Western understandings of *elan vital.* The concepts of *qi* in Chinese, *ki* in Japanese, *prana* in Hinduism, *gi* in Korean, *pneuma* in ancient Greece, and *manitou* among some indigenous Americans, refer to the same life force. All conceptualize humans as a part of their environment, including nature, rather than standing outside of it. Decentering the human is also a theme of the post-human literature on climate change in particular (see, e.g. Cudworth and Hobden 2011). Audra Mitchell (in Nyman and Burke 2016), for instance, has contrasted an ethics that emanates from humanity with an ethics that

originates in nature, as expressed for instance by indigenous movements in the figure of *pachamama*, in which no particular form of being has ontological primacy and harm and violence are understood to be directed not only at beings but relations between them. This de-centering shifts the emphasis from human control over the environment to conceptualizing ourselves as a part of it.

Traditions that embrace some notion of a life force produce a unitary mind-body relationship rather than a dualism. The life force or *chi* is central to the holistic perspective of traditional Chinese medicine, for instance,[3] where the mind and body are not understood as either separate from each other or detached from the larger context of a person's life. *QiGong* healing practices and the *Tai Chi* martial arts tradition that emerged from it, rest on the idea of moving and balancing the *qi* in the body. The mind-body assumptions that underpin the practice of health frequently connect to traditions of warfare.[4] Most military thinkers in ancient China, not least Sun Tzu (Sawyer 1993, 245-186), devoted a few passages to the life force, which was seen as crucial to commitment and nurturing courage.[5] *Qi*, often denoted as

[3] In the Chinese tradition of medicine, the body is understood to be composed of a system of meridians through which *qi* flows. Disease arises from blockages to the flow of energy, and acupuncture is a technique by which the blockages are released, thereby re-establishing a balance. Practices relating to Eastern healing are increasingly widespread in the West as well as the East. Mindfulness, yoga, reiki, tai chi, and acupuncture have acquired a place in Western societies, not least for coping with the stresses of day-to-day life and the trauma of war. What is now referred to as "integrative" or "complementary" medicine, which encompasses not only Chinese but, for instance, Indian Ayurvedic medicine, rests on principles that are consistent with the assumptions of quantum physics, as expressed in the title of Deepak Chopra's (1989) book, *Quantum Healing.*

[4] Yoga, while not itself related to fighting, includes postures and breathing techniques that have been incorporated into Indian martial arts (Kronos 2002), both of which draw from the Vedas and are formed by the same basic principles. Despite the emphasis in Buddhism on nonviolence, there is a long history of Buddhist monks who took up arms, including the warrior Shaolin monks, the Zen Buddhist warrior monks in Japan who influenced Bushido culture, and in contemporary Thailand (see, for instance, Jerryson and Juergensmeyer 2010).

[5] Qi is at the heart of the psychology of warfare, and in particular the psychology of fear and courage. According to the Ssu-ma Fa (Sawyer 1993, 107-144), "When the heart's foundation is solid a new surge of ch'i will bring victory." Soldiers who are doubtful, worried, or afraid destroy an army. "When men have minds set on victory, all they see is the enemy. When men are filled with fear, all they see is fear" (Sawyer 1993, 121). The wise general seeks to attack doubt and weakness in the enemy. To regain control of the army's spirit is critical. While determination, intention, and "will" are

ch'i, was the critical element of command,[6] the spirit and the vital energy of life. Ancient Chinese military strategies, which continue to have a place in Asian cultures, rely on the mobilization of *qi* to avoid the use of force, or, when necessary, to engage effectively with force. While discredited within frameworks dependent on classical physics, which have been dominant for the last few hundred years in the West, the life force has a place in many cultures.

Experience, in Wendt's argument, is "flat," going down to the "deep structure of matter" (111). His notion of "flatness" reinforces the idea that structure is no more prior to an individual organism than the organism is prior to structure. Instead, they are mutually constituted—and quantum physics provides a physical basis for this mutual constitution that is otherwise untenable (260). To return to the zoomed-out image: after all of the lines that distinguish one person from another and one Leviathan from another recede into the background, what remains is a flat landscape of entangled organisms, all conscious, all processing information/creating meaning, and all negotiating the relationship between inside and outside. Flat consciousness exists at all levels. It is the information processing by which a plant bends toward the sun, by which my dog remembers and strategically locates an abandoned scrap of food that was seen a day earlier, and by which humans and organizations go about their day-to-day business.

Consciousness

important, it is *qi* that empowers the effort and must be "stimulated, nurtured and controlled if armies are to be successful" (Sawyer 2007, 50).

[6] *Ch'i* is the same as the *qi* of *QiGong*, a system of deep breathing exercises. *Ch'i* is the old way of spelling *qi*. By contrast, *chi*, without the apostrophe, has a different meaning in Chinese: pole, or utmost point, the *chi* of *Tai Chi*, a Chinese cosmological term for the supreme ultimate state of the absolute. Many thanks to Wang Hung-Jen for this clarification.

In Wendt's argument, the hard problem of consciousness arises at the interface between subjectivity and relationality. My concern here will be the relationship between consciousness and language. I start by exploring the implications of a criticism Wendt makes of Wittgenstein, as well as Foucault and Habermas, three giants of interpretivist philosophy: that is, that they each, in different ways, avoid a "philosophy of the subject," which they associate with a bankrupt Cartesianism. Wendt argues that they therefore exhibit a "serious ambivalence about what makes it subjectivity in the first place, namely its conscious aspect" (19). In what follows, I explore the relationship between Wendt's emphasis on subjectivity and Wittgenstein's focus on intersubjectivity. While Wendt's discussion of consciousness highlights private experience, subjectivity and relationality are ultimately interdependent and entangled in language.

On the surface, Wittgenstein's definition of intention cannot be squared with Wendt's argument about subjectivity and consciousness. Wittgenstein (1958, par. 337) states that intention "is embedded in its situation, in human customs and institutions. If the technique of the game of chess did not exist, I could not intend to play a game of chess." This definition would seem to remove subjectivity from intention. So, for example, the intention to marry is expressed through the act of marriage, which is surrounded by customs, institutions and uses, not least the speech act "I do," or stamping on a piece of glass, by which two individuals are transformed into a single unit as husband and wife. Wendt's emphasis on consciousness and freedom of the will points toward private internal experiences, while Wittgenstein's discussion of intention seems to minimize the role of consciousness or processes "inside the mind."

Wendt also emphasizes the importance of boundaries around the self as necessary to its quantum coherence. In the absence of these boundaries, life would be impossible. He

states three implications of quantum cognition as a defining feature of life (142), one of which is

> that every organism's experience, "what it is like" to be them, is intrinsically private—not necessarily without a public sign (e.g., pain), but inaccessible *as such* to an observer. This privacy of experience follows directly from the claim that quantum coherence is the physical basis of life. Coherence can only be sustained if it is shielded from the environment by a wall; breach that wall in an effort to get inside an organism's experience and you will kill the organism.

One might ask, however, whether Wendt's insistence on the privacy of experience simply represents a difference of focus that is not by definition in conflict with Wittgenstein's philosophy. Wendt is much clearer, later in the book, that subjectivity is ultimately relational. However, his use of metaphors of "walls" and "breaches" in the extracted passage suggests a harder division than the one between the inside and the outside of the cell, for instance. Cells have permeable boundaries rather than walls.

Looking at the problem from the perspective of Hinduism and Buddhism provides another window onto what is at stake in this difference of emphasis. Consciousness, far from being problematic, as it is for Western science, is at the heart of Eastern traditions, which were focused inward. For instance, Hinduism, going back to the first millennium BC, found and developed methods of a "supreme science" (*brahmavidya*) that was concerned less with the external world than with knowledge of the reality that might be discovered through the mind. The *rishis* or "seers" of ancient India identified beneath the world of change an infinite changeless reality that is said to exist at the core of every human personality (Easwaren 1985,

4). The single most important purpose of life, they believed, is to discover this reality experientially in order to realize compassion on earth. The *rishis* found, in going beyond the senses, a continuous process of change, with matter coming together, dissolving, and coming together again in different forms (ibid., 10). In the introduction to his translation of the Hindu *Bhagavad Gita,* Eknath Easwaren says, "Just as the world dissolves into a sea of energy, the mind dissolves into a river of impressions and thoughts, a flow of fragmentary data that do not hold together" (ibid., 10-11). In Hindu and Buddhist meditation, consciousness, when acutely focused, is withdrawn from the body and mind, entering into a singularity in which the sense of the individual as separate dissolves. It was in this state that the "seers" discovered a core of consciousness that is beyond time and change, which they referred to as *Atman*, the Self.[7]

Wendt's concern is that while social scientists, including interpretivists, have generally been unable to ignore the role of intentionality, they are ambivalent about what makes this intentionality subjective, which is its conscious aspect (18-19). On the one hand, Wendt wants to take the consciousness of the private subject more seriously. On the other hand, his argument that the body is a "walking wave function," like Easwaren's contention that our thoughts "dissolve into a sea of energy," highlights the illusory nature of the self, which has been emphasized by both quantum physicists and Buddhists.[8] If the "self" is an illusion, how is subjective intention or consciousness reconciled with Wittgenstein's notion of socially constructed intention, with Hindu consciousness of a Self (Atman) that is beyond time and change, or with Wendt's shift, later in the book, to a notion of relationality and quantum entanglement writ large?

[7] It should be noted that Buddhists do not embrace this notion of Atman, and instead focus on causal relations between different aspects of mind (Perrett 2002, 380).
[8] In terms of quantum physics, this is an extension of observations that there is "no matter as such." See, for instance, Planck 1944.

An example reveals what is at stake, while also pointing toward the *interdependence* of subjectivity and entanglement. In Mahayana Buddhism, a distinction can be made between an act of suicide, including self-immolation by fire, and the same act undertaken by a *bodhisattva*, or enlightened one. The difference is the intention behind the act (Kovan 2014, 781; Dalai Lama 2013). Was the agent trying to destroy him- or herself out of despair and a desire to leave this world? Or was the agent making a sacrifice out of compassion for a suffering people? On the surface, this may seem a straightforward case of one having reasons of one kind or another for ending one's life. It is also possible that both sentiments co-exist in any one person. Either way, from a subjectivist perspective, the choice is a function of the consciousness of an individual, who, one assumes, has an intrinsic identity, although one that is shaped by customs and institutions.[9]

The water becomes muddier if one considers the paradoxical concept of the self within the Mahayana tradition, which revolves around two interdependent but distinct notions. The one is the impermanent self, associated with the physical body, which is more often than not short-sighted in its egoism. This egoistic self looks something like the rational utility maximizer, who is first and foremost interested in his pursuit of happiness, often at the expense of others and thus, from a Buddhist perspective, is the source of much suffering in the world (Rinpoche 2002). In contrast to the social-science model, the worldly self of Buddhism, which is defined by its impermanence and separation from others, coexists with an awareness of self as entangled with all life and thus capable of compassion.

The second-century philosopher Nagarjuna (see, e.g., Garfield 1995), founder of the Madhyamaka (Middle Way) School of Mahayana Buddhism, might, in turn, situate this paradoxical notion of self against the backdrop of two interdependent realities, the one

[9] Understanding an act of self-destruction as that of a *bodhisattva,* for instance, is specific to Mahayana Buddhism and probably would not provide a framework of meaning in all contexts.

characterized by "emptiness" (the quantum universe) and the other more conventional (the material reality we would associate with classical physics, which, however, is fundamentally *conceptual* in Nagarjuna's philosophy). Emptiness is a reference to the absence of intrinsic nature, not in the sense of nihilism, but because everything is fundamentally relational (Priest 2009, 467). Nagarjuna's concept of "dependent origination" highlights the extent to which all things and events arise in dependence on a complex web of interrelated causes and conditions, such that nothing exists by itself. There can be no whole without parts; without a whole there can be no concept of parts; and all phenomena lack an independent identity (Dalai Lama 2000, 37-38). A simple material object, such as a pot, for instance, cannot be said to exist in and of itself; it is a product of the intention of the potter, the circumstances that gave rise to the intention, the subsequent action, the combination of clay and water, the coming together of molecules, the atoms and other minute particles that form these constituents—which are themselves dependent on numerous other factors (Dalai Lama 2000, 37). Likewise, the identity of any one person is defined by having been born of certain parents at a certain time, having certain DNA, going to a certain school, having certain friends, and being affected by the things she did and saw (Priest 2009, 469). According to Nagarjuna, "emptiness" is a condition of interdependence: that all things are empty means that all things are mutually dependent (Barnhart 1994, 649). There is no absolute, non-relational, independent "presence" that is unconditional (ibid., 652). Toward the end of *Quantum Mind,* Wendt arrives at a similar point, which he argues provides the physical basis for "mutual constitution." He points out that when "particles become entangled they too acquire new properties, namely relational properties to the whole." In entanglement, therefore, parts and whole are "*co*-emergent, rather than only the latter emerging from an ontologically prior base of the former" (257). While he refers to humans as walking wave functions, he also writes that "the relata of social relations are *themselves* superpositions—

'walking wave functions'—and as such do not have intrinsic properties in the first place, but only have the properties they do by virtue of their entanglement with other agents" (259). He also ultimately "frees consciousness from the confines of the skull and get[s] it out into the world" (276).

As with Judith Butler's (1993) notion of performativity, the self must always be performed and the performance is dependent on a matrix of socially possible relationships. Wendt provides a quantum backdrop for this relationality, which shares a family resemblance with Nagajuna's concept of "dependent origination." Buddhism is, however, more explicit than Wendt in suggesting that the self does not exist as a separate entity. While humans have a strong sense of "I," it is actually a label that we apply to what is a "complex web of interrelated phenomena" (Dalai Lama 2000, 43). While Wendt neither challenges the view that individuals are classically real nor defends ontological collectivism explicitly, he does argue that holism is a flat ontology that on the surface looks individualist, but that can be justified only in quantum terms, which is a result that is incompatible with individualism. Wendt and Nagaruna both point to the conclusion that the subject is on some level illusory but relational, and given meaning within a holistic framework. It has no intrinsic identity.

To return to the earlier example, the intention to self-immolate is a performance of customs and institutions which belongs to a social and relational context of meaning, which is entangled in language rather than arising from a subject with an intrinsic nature. Suicide is expressed through a social structure that constitutes the meaning of a self-inflicted death that brings life to an end. The act is that of an individual, often isolated, but carries the social entailment that most religions prohibit suicide, including Buddhism.[10] An act of self-destruction that arises from compassion, as opposed to a suicide, begins with a recognition of

[10] Although this may require some qualification insofar as Samurai tradition of *Seppuku*, or committing suicide in the face of defeat, had a connection to Zen Buddhism.

the entanglement of all life. It also requires that something is left over, and indeed the figure of the martyr is accepted in some form by most religions. Within Mahayana Buddhism, self-immolation belongs to a longer history, during which it has found expression in various contexts, from repelling invaders to casting light on human suffering (see Benn 2007). That is how Thich Nhat Hanh (1967), a Vietnamese Buddhist monk, made sense of the iconic self-immolation of Thich Quong Duc in Saigon in 1963. In a letter to Martin Luther King, he explained why Quang Duc's act was not a suicide or even a protest, but a performance of compassion. The objective of his performance was not to escape life in this world out of desperation, but rather to draw attention to the suffering of the Vietnamese people. Indeed, if suicide were the objective, then a less painful and less public method would surely have been chosen.[11]

The self-immolation of the *Bodhisattva,* or enlightened one, involves the death of the impermanent body, but expresses the compassion for all sentient beings that is at the heart of Buddhism. Life is left over, i.e., the suffering community that is potentially restored in a redemptive moment (see Fierke 2012). While the figure of the *Bodhisattva* is specific to a particular tradition, it has resonance with other traditions, such as the figure of Christ. The source of the "will" to commit suicide is the egoistic self, as distinct from the will of *Bodhisattva*, which arises from an awareness of suffering of sentient beings. The distinction suggests less a split personality than distinct structures of meaning that constitute identity within a context.

A practicing social scientist might protest that we still lack insight into whether any given self-immolator (for instance, in the contemporary context of Tibet) is committing suicide or is a *Bodhisattva*. But how could the intention be known if one did not take account of the political or religious context or its absence? It is possible to recognize the practice, on

[11] For a more in-depth analysis of the Vietnamese example, see Fierke 2012, chapter 6.

the basis of context, without denying the existence or importance of consciousness. However, if consciousness "dissolves into a river of impressions and thoughts" (Easwaren 1985), or, as Wittgenstein claims, is always illusive,[12] the subjective and the relational dimensions of consciousness are fundamentally interdependent. Consciousness of self is necessarily dependent on social customs and institutions, but cannot be reduced to these. While lacking an intrinsic nature, we all possess a sense of "I."

Language and Ethics

Surely someone who sets himself on fire is more or less conscious, as an individual, of the act he undertakes and the reasons for it. However, the point is not to remove consciousness from the equation but to place it squarely at the interface between inside and outside. Subjectivity and relationality, including the intersubjective dimensions of language, are not mutually exclusive but are bound up with each other, even while it is difficult to hold this relationship in place. In this view, we need to shift from a notion of "flat" experience, which is not dependent on language per se and is "inherent in the deep structure of matter" (111), to experience that is given meaning in human language. Wendt's definition of experience focuses on "what it is like" to be (142)**,** which is presented as inherently private. Yet for humans, language is, in his argument, an expression of entanglement and non-locality.

A more variegated notion of consciousness would also seem to be crucial to any notion of ethics, which is a subject Wendt does not discuss except in passing. The argument about subjectivity and relationality constitutes a particular self-other relationship, with consequences for action towards others. As the Dalai Lama (2000, 48) notes:

[12] While, as he (1958, 645) states, we may feel an inner experience, it may, at one and same time, seem precise but then the experience of intending "seems to vanish again. Instead one remembers thoughts, feelings, movements and also connexions with earlier situations."

> If the self had intrinsic identity it would be possible to speak in terms of self-interest in isolation from that of others. But because this is not so, because self and others can only really be understood in terms of relationship, we see that self-interest and others' interests are closely interrelated. Indeed, within this picture of dependently originated reality, we see that there is no self-interest that is completely unrelated to others' interests. Due to the fundamental interconnectedness which lies at the heart of reality, your interest is also my interest. From this, it becomes clear that "my" interest and "your" interest are intimately connected. In a deep sense they converge.

The idea that humans are not ultimately separable and egoistic, but deeply entangled in a relationality with others, has fundamental implications for how we conceive of what is possible, desirable, and ethical at every level of individual, social, and political life. From a materialist perspective, or, for instance, that of the realist school of international relations, ethical options are constrained by the limits of the material world and concerns about survival. If one egoistical state can expand and destroy the entire system, then intervention is necessary to put that state in its place, much as intervention to destroy cancerous cells is necessary in order to prevent their further spread. From the perspective of entanglement and compassion, if I and thou are not entirely separate atomistic beings, then harm to another is ultimately harm to the self as well. This, when combined with a notion of dependent origination, points to the potential implications of the smallest act, in thought, spoken word, or deed, for its impact not only on self but other. The concept of *karma* (literally "action") suggests that whatever we "think, say, do, desire and omit" creates new circumstances and causes some other event (Dalai Lama 2000, 141). The sharp separation implied by an

individual ontology of egoism is conducive to fear of others. Once the assumption of intrinsic identity is replaced by an identity that is fundamentally relational and entangled with others, the equation changes, potentially opening a space for compassion towards and empathy with the suffering of others.

Ethics begins with language, inasmuch as this is where self and other are defined in a dependent relationship. The ancient Daoist thinker, Wang Chen (1999, 16-17), who identified our tendency to conceptualize (along with desire) as the one of the main causes of human suffering, declared:

> As soon as things have names and people have emotions, right and wrong, other and self already exist in their midst. When right and wrong, other and self exist in their midst, love and hate will arise and attack each other. When love and hate arise and attack each other warfare will flourish.

Insofar as government actions often stimulate disquiet, impelling the people to anger and misery (ibid., 18), they do so through articulations of self and other, which is the point of departure for Confucian arguments about the importance of wise leaders. This suggests that some conceptualizations will be more conducive to "wave function collapse" around positive potentials than others.

Building on the double-slit experiment in quantum physics, which established that measurement changes the object of observation, Wendt argues that, in the social world, language use represents a form of measurement that transforms the object of observation.[13]

[13] According to Robin Wang (2012), from a Daoist perspective, that anything can be simultaneously yin or yang reinforces the fact that "things are always implicated in multiple relations at one." It is the intentions and priorities of the observer that determine which relation is in view (Wang 2012, 7), a conclusion that resonates with the view that measurement changes the object of observation.

"In language, what brings about a concept's collapse from potential meaning into an actual one is a speech act, which may be seen as a measurement that puts it into a context, with both words and potential listeners" (217). In using language, whether as researcher or other actor, we enact one set of potentials rather than another. Within the multi-perspectival reality of quantum physics, the use of language shapes and goes hand in hand with changes in material reality, in that language both arises from and shapes the context of doing.

In Wendt's argument, language use is both an expression of entanglement and the point of departure for the enactment of multiple potentials. What does this look like in practice? Take, for instance, the concepts of migrant, refugee, and terrorist, which, from this perspective, are not merely labels that apply to the intrinsic nature of a subject, but are ultimately relational and defined in contrast to those who "belong." "Refugee" suggests someone fleeing a war zone, with a legitimate need for asylum, while "migrant" points toward the less legitimate goal of relocating to improve economic circumstances, and "terrorist" to someone who intends or uses indiscriminate violence. None of these categories map neatly onto a subject with an intrinsic identity; rather, the application of these labels by different audiences establishes a conceptual hierarchy and makes certain practices possible, which may have a role in shaping not only the material circumstances of bodies but the bodies themselves. If the categories are linked to the further assumptions that "they" are "human like us," or are "like animals," the "measurement" performed by these words will have implications for how individual bodies are treated and thus potentially transformed—for instance, whether their humanity is recognized and respected or whether some of the core values associated with human dignity can be suspended. The language already contains a measurement of the identity of particular types of people as human or less than human and a potential source of danger. This measurement affects what we feel, whether compassion or fear, and how we behave toward them (welcoming or refusing them entry, holding them

behind barbed wire or a wall, stripping them of their possessions, torturing them, even killing them). Thus, the use of language results in wave function collapse around one potential rather than others, instantiating one reality rather than other possible realities.[14]

The physical basis of our conceptualizations that is provided by quantum physics transforms ethics from a purely normative enterprise focused on what should be—which goes against the grain of what is—to an enterprise focused on potentialities. In turn, this opens a space for agency. Once consciousness, and the attendant conceptualizations, are understood to instantiate potentials, "empirical" questions of security, for example, can be seen to entail our entanglement with and thus "normative" responsibility towards others, such that we are always "acting as if" (Fierke 2016, 220).

By the same token, an individualist ontology of humans as egoistic self-maximizers provides an ethical point of departure for acting *as if* one is selfish and egotistical. The ontological assumption that humans have an intrinsic identity as egoistic suggests the appropriateness of protecting the self. An ontology of entanglement and dependent origination reaches beyond this assumption to other possibilities. From this perspective, my "fear" is not so much a memory-encoded wave function that collapses as a matter of course. Instead, action begins with an awareness of the impact of language both in "my" consciousness (e.g., fearful thinking) and in the subsequent influence of "my" action on others, which may potentially multiply *ad infinitum*, eventually circling back to affect "me." Agency arises from mindfulness, which represents a further turning inward. If "I" can observe the negative thoughts passing through my head with some distance, simply watching them float by without giving them ontological status as real, "I" am freed to make more

[14] It is hard to see how epistemology—in this case, how we "know" a refugee, migrant, or terrorist when we see one—can be separated from the ontology of refugees, migrants, or terrorists, their being and how they should be treated. The performance of each begins with language and is relational.

compassionate choices. In this respect, consciousness, paradoxically, becomes *more* private and deliberate (less reactive) as openness to and an awareness of entanglement increases.

In the one framework, billions of entangled souls go through each day acting on the basis of their individuation and isolation, their fears, concerns, and desires, taking their own negative thoughts as a reflection of reality, without really seeing others or taking their worlds into account. Fascism arises, arguably, when fear is individualized to the point that it binds the collective so tightly that individuality is paradoxically lost, subordinating "free will" to an authoritarian leader. The boundaries that separate inside from outside harden, while the boundaries that would protect the privacy of the individual inside dissolve into fear.

Turning back to the other side of the equation, the expansion of numbers of people who have undergone an "orthogonal rotation of consciousness"[15] and are more mindful of the potential impact of their actions on others can percolate into the world and shape it. As Jan Kabat-Zinn (2005, 350) notes, "Just by asking, for instance, 'Who is suffering?' 'Who doesn't want what is happening to be happening?' 'Who is frightened?' 'Who is thinking?' 'Who is feeling insecure or unwanted, or lost?'or "What am I?" we are initiating a rotation in consciousness into another 'dimension,' which is orthogonal to conventional reality, but co-exists with it because we have simply 'added more space.'" Such an orthogonal rotation moves away from a focus on the harm "they" might do to "us," to our common vulnerability and suffering. After this rotation, the world is a larger place that is cast in a new light. No longer confined to the conventional mindset, the narrow view of self-interest is replaced by more compassionate possibilities, which were inconceivable within the prior one-dimensional space (Fierke 2016).

[15] Orthogonal, a term originating in Euclidean geometry, refers in this case to a rotation in consciousness by which conventional reality is situated in a much larger three-dimensional space.

Small acts instantiate realities that can multiply. Steven Spielberg's film, *Schindler's List*, ends with a powerful scene that shows the multiplication of living children, grandchildren, and great-grandchildren who exist because of Schindler's efforts to protect their forebears from extermination. Angela Merkel's decision to welcome a million refugees a year to Germany, which was framed in terms of compassion, represents a somewhat more complex case. Her change of policy followed on the widely broadcast image of Aylan Kurdi, the drowned Syrian boy, which instantiated an outpouring of societal compassion, toward Syrian refugees in particular, that percolated upward. A series of terrorist attacks in Cologne, Nice, and Berlin then led to a shift toward widespread fear. Likewise, President Trump's 90-day ban on citizens from seven predominantly Muslim countries, including all refugees from Syria, dramatically transformed a large refugee population into a group of potential terrorists. Echoing Wendt's point about the importance of both separation and entanglement to survival, one could argue that Merkel's act of compassion didn't take sufficient account of the security implications of allowing so many people into the country in such a short time. The result was a more divisive political environment, magnified by the violent incidents, and the increasing strength of far-right movements that want to pull their respective countries out of the European Union. Compassionate potentials have, as a result, been dampened by an increased fear of refugees and migrants, which has led to their increased suffering. From another perspective, the problem is not so much faulty decision making by Merkel as the absence of effective decision making in the EU, or the difficulty of any single country responding to what is ultimately a global problem.

Quantum *uncertainty* also sheds light on Merkel's decision, which clearly must have failed to anticipate the reactions to which it led. The difficulty of ethical decision making in an uncertain world is also evident in the development of nuclear weapons. On the one hand, these weapons are the ultimate bad, as expressed in Oppenheimer's reference at the time of

the first atomic explosion to the line from the *Bhagavad Gita,* "Now I have become death, the destroyer of worlds." Nuclear weapons could bring an end to human life. Yet they have been valued by many as good because of their role in ending World War II and in providing the stability of nuclear deterrence. While drawing into question any clear distinction between "reality" and "normativity," this example also suggests the limits of ethical agency in a framework of uncertainty, and the possibility that evil is implicated in the good, just as good may be implicated in the evil,[16] which complicates the question of how we "should" act.

Memory and the Past

How we should act is a question of ethics. Whether we could have acted differently is a question of memory and the past. In his chapter on non-local experience in time, Wendt argues that "it is possible to literally change the past" (190). Philosophical debates have claimed that it is only our descriptions of the past that can change, but not the past itself, which, in Wendt's argument, is due to a failure to consider the physics of the past. "Changing the past" connotes changing what happened. I start with an example that is closer to the physics of the past, in order to clarify what Wendt means by this phrase.

Michael Frayn's 1998 play *Copenhagen* revolves around the 1941 visit by Werner Heisenberg, the chief German physicist, to his former mentor, Niels Bohr, in Nazi-occupied Denmark.[17] Frayn suggests that if it were possible to change a single moment of the past, it could have widespread ramifications that spread through the entangled web of past, present, and future in all kinds of unanticipated ways. Frayn also raises (indirectly) the counterfactual question of which moment in the interaction between Heisenberg and Bohr, which small

[16] In Verse 2 of the *Dao De Ching*, Lao Tzu states that "under heaven all can see beauty as beauty, only because there is ugliness. All can know good as good, only because there is evil." This suggests that good and evil, while usually understood as mutually exclusive, are always implicated in each other.

[17] See Edkins 2003 for a fascinating analysis of Frayn's play.

speech act, might have tipped the balance such that Germany would have gotten the bomb first.

While Wendt wants to argue that it is possible to change the past, he does *not* mean the type of change imagined in Frayn's play. His analysis begins by examining the philosophical debate about changing the past, which revolves around two constructivist camps, one epistemological and one ontological (193). As neither camp directly invokes physics, Wendt wants to ground the ontological camp's argument in quantum entanglement and memory, thereby going beyond the assumption that time is a linear succession of temporally local points moving up to Now (198). Temporal non-locality moves away from the separability of the past toward entanglement, i.e., the "superposition of states at different times" (Filk 2013, 535). Quantum theory, Wendt argues, calls into question the idea that the past *cannot* be changed, or that even though the past once existed as a now, it no longer exists now. This argument is based on the importance of memory, without which there can be no history. As they occur, experiences are imprinted into memory, which, over time, is the basis for classical histories of our lives, as individuals or societies. "A society that did not hand its collective memories down through the generations," he writes, "would have no past and so in effect have to reconstitute itself at every moment (if it could be called a 'society' at all)" (200). Experiences of the past are present in the Now because the entanglement of past experience "with the wave function of unconscious memory implies a temporal non-locality, in which past and present are not fully separable." Therefore, we can, in the now, "re-live" remembered experience and potentially reconstitute it (201). Through a discussion of Wheeler's Delayed Choice experiment, which is a variation on the Double-Slit experiment, Wendt comes to the conclusion that "memories are not separable from experiences in the past, but connected to them non-locally. So in recalling experiences in light of the 'mirror' of new understandings, what those experiences *were* was changed—not causally but

constitutively—which is an ontological change" (203). In other words, people can travel to the past, "not with their bodies, but by entangling their thoughts with past experiences that survive in memory" (204). Moreover, insofar as "it is only at the end of our lives that who we were, and what we did, are fully determined," "someone who did bad things when they were young can, within limits, change that past by good deeds when they are old. In short, quantum consciousness provides a physical basis for redemption, something which we all take for granted as a possibility, but which seems hard to explain if we are nothing but classical machines" (ibid.).

Wendt provides much greater detail in presenting the quantum basis for his argument, but it is difficult from his account to see how the past itself is changed as distinct from the meaning given to it in the now, or whether who one was or what they did can ever be fully determined. There is also a semantic problem: the language of "changing the past" suggests that the past is a thing, and that not only the memory but the past experience is changed, although it is this notion of the past as a thing that he is criticizing.

The discussion of changing the past raises two larger interrelated issues. The first is whether, as social scientists, the quantum dimension is necessary, or whether the analysis of language is sufficient for understanding the process of redemption. The quantum argument provides a metaphysical grounding for what most social scientists do on some level, which is analyze language. But what does the quantum angle add to this? For instance, what is the added value of bringing a quantum dimension to the analysis of the South African Truth and Reconciliation Commission, which can be considered a redemptive process at the societal level akin to the individual example Wendt provides? Central to the TRC's objectives was the acknowledgement of past trauma and the narration of a different and shared history, to the end of re-constituting both past and present. One consequence may be a different narrative of the past, but it is difficult to comprehend how the past itself changed as a result rather than

the memory of it, although the latter potentially has constitutive consequences for future action.

The second question is whether there is a further dimension of temporal non-locality that is not grounded in language per se, as suggested by Wendt's claim that "the wave function of unconscious memory implies a temporal non-locality in which past and present are not fully separable" (201), and that "memories are not separable from the past, but connected to them non-locally" (203). The discovery of epigenetic inheritance highlights the extent to which environmental influences, including stress and emotions, can modify genes without changing their blueprint, and that these modifications can be passed on to future generations (see, e.g., Jablonka and Ray 2009; Daxinger and Whitelaw 2016).[18] And M.P.A. Fisher (2015) has found that two particles can stay entangled and influent upon one another even when separate and that environmental factors can influence this entanglement, thereby creating the possibility of memory inheritance. This suggests that trauma and the memory of trauma may remain entangled across separate generations of a family with greater or lesser occurrence depending on the environmental factors that affect the family dynamic. By extension, an environment of conflict or war would facilitate the genetic expression of traumatic memories while, as recent evidence suggests (Gapp et.al. 2016), a more positive environment may reduce the likelihood of this expression. Although the science is still quite young, this suggests an entanglement beyond language, by which any one person's Now may be affected by the experience of preceding generations.

One might ask whether, rather than changing the past, it might be possible to disentangle action in the Now from the pull of traumatic memories, not to the end of

[18] The basic discovery of epigenetics is that non-genetic factors can cause an organism's genes to behave or "express themselves" in different ways (Oschman 2016, 202). The cells of the body choose to read or not to read the genetic blueprint depending on the signals being received from the environment.

eliminating memory, but rather to reduce its toxicity. One answer would be to construct positive environments where traumatic memories are less likely to be invoked. For example, inasmuch as the European Community/Union was an attempt to reduce the likelihood of war in Europe by increasing the interdependence of European economies, one could argue that, due to the creation of a positive environment of cooperation, subsequent generations are less inclined to go to war. (Unfortunately, the growing strength of far-right movements in Europe suggests that the changing context and environment of the EU may invoke older traumatic memories and violent potentials.) Alternatively, one might explore the potential to disentangle traumatic "knots" so as to open a space for greater dialogue and negotiation. Here it is worth mentioning systemic constellation theory, which is more widely known on the European continent than in Britain or the United States. Systemic constellation therapy was developed by a German priest who spent twenty years observing Zulu healing practices (see, e.g. Hellinger 1999).[19] While the method has been influenced by, among others, Gestalt therapy, its comprehension requires some understanding of quantum entanglement or epigenetics. The knots or traumatic entanglements identified during the process of constellating often relate to experiences of displacement, slavery, or war by earlier generations that continue to affect relationships in the present. By disentangling the traumatic memory from the present, the emotional intensity is reduced such that a space is opened to deal with the Now on its own terms. The main point is illustrated in a simple example, in which two men with different belief systems are embroiled in a deeply emotional fight, with both of them carrying the anger and experience of their fathers, grandfathers, great-grandfathers, etc.[20] The constellation makes it possible to acknowledge the entangled fates of

[19] While not without controversy, not least because of some rather provocative claims Hellinger has made, the practice has spread to some 25 countries, and has been used with some success in relation to family and organizational systems, including the families of Holocaust victims and perpetrators.
[20] Many thanks to Nikki Mackay, a medical physicist and systems constellator, for this example. See also Mackay 2012.

earlier generations and give them a place, while separating them from the current fight, which then becomes *only* about conflict in the present, thereby clearing some of the baggage and expanding the space for communication towards a peaceful resolution. Some initial work on applications of related techniques to political contexts of peace and conflict has been done in Germany and Austria (see, for instance, Dietrich 2013), although highlighting the constructivist dimensions more than the quantum (see Splinter and Wustehube 2011). The question, in light of the non-local nature of entanglement, is whether it might be possible to develop methods for disentangling past traumatic memories to the end of opening a greater space for finding political solutions to seemingly intractable conflicts, particularly in contexts of dire humanitarian need, where more conventional methods of diplomacy or humanitarian and other forms of intervention have proven impossible precisely because of the intensity of fighting on the ground.

The physicality and non-locality of quantum entanglement, particularly if time is not linear, would seem to extend beyond the conventions of language, consistent with Wendt's initial claim that non-human life has memory but no language as such. If this is so, the potential implications go beyond the conscious reconstitution of the past or "changing" it. Reducing the pull of past memories, and their expression in language, might remove some of the toxicity from politics, both domestic and international.

Leaders and Context

Thus far, I have explored Wendt's argument about the *elan vital* or "life force," which depends on both separation and entanglement; an understanding of consciousness and intention that is not only subjective but relational; language use, which reduces the distinction between the "real" and the normative, while raising a question about the limits of agency in a quantum world of uncertainty; and, finally, whether non-locality is expressed only in

language, or whether toxic memories entangled in past traumas might be disentangled from the Now. In this section, I consider the relationship between Wendt's ontology and the importance of leaders.

Wendt's argument is as follows: The wave-function collapse of individuals is instantiated through their practices, but is also entangled in social structures (264). Social structures are "continuously popping in and out of existence with the practices through which they are instantiated," "*pulled* out of the quantum world of potentiality into the classical world of actuality by agents" (264). Thus, practices that are entangled in social structures are more likely to emerge than others. This is not a relationship that rests ultimately on individuals, that is, on the sum of its parts, but rather on holistic, horizontal relationships between individuals who are constituted by non-local entanglements mediated by language. "When people act in light of a social structure they are expressing its teleological purpose," since "the intentional states that accompany agents' practices are not fully separable from the collective intentions that make them possible" (265). Leaders—individuals who are vested with the authority to act for the state as a whole—collapse a state's potentialities into an actual choice that has non-local consequences for everyone else in the group, and thus their intentions and character are important (260).

This complicated argument, only roughly conveyed here, raises a question about the potential conflict between *differen*t teleologies. For instance, President Trump's first few weeks in office were characterized by wave function collapse around a number of potentials, from building a wall at the Mexican border to temporarily excluding the entrance of immigrants from certain countries and all Syrian refugees. However, in a multi-perspectival quantum world, his own instantiations, while carrying more weight as an elected leader, also collided with the speech acts of others, both within and without the United States, which

expressed different teleologies. I want to focus on two conflicting instantiations arising from leaders in East and West.

On the hand, the language of President Trump sought to instantiate a reality of hard protectionist walls around the United States, which includes a measurement of immigrants or refugees as well as Islam. In contrast, Chinese President Xi Jinping, starting with a speech act in 2013, attempted to re-instantiate the ancient Silk Roads, in stark contrast to Trump's protectionism and its focus on the nation-state. (Pursuing protectionism, according to Jinping, "is like locking oneself in a dark room. While wind and rain may be kept outside, that dark room will also block light and air" [Phillips 2017].) The ancient Silk Roads are a symbol of cross-cultural exchange and the free movement of peoples and goods. In Chinese discourse, discussion of the Silk Roads relies on a language of building trust and respect for diversity across borders.

The Silk Roads project, more formally known as the 'One Belt, One Road' (OBOR) policy, has also begun to materialize in the construction of institutions, such as the Asian Infrastructure Investment Bank, that will fund a range of infrastructure projects along the route. China is also involved in the negotiation of expansive transnational rail networks with 28 nations, mostly along the ancient trade routes, as well as a "maritime silk road" plan for the purpose of building ports and boosting maritime connectivity with Southeast Asia and countries along the Indian Ocean. Both Trump and Xi Jinping are actively transforming a relational reality in very different ways, the one highlighting separation and the other entanglement. While the one is pulling inward, putting America first, the other is building "connectivity" across the Eurasian continent. While the contrast and its significance deserve greater attention than is possible here, I want to highlight the ontological difference, against the backdrop of Wendt's argument.

Toward the end of the book, Wendt articulates theoretically, more clearly than before, the possibility of a social subjectivity that contributes to a sense of collective identity in a community that is *not* bounded by impermeable boundaries but rather entangled with that which is defined as outside. A healthy organism has a boundary but is also dependent on an openness to and entanglement with its larger environment. The balance between the two is important, and too great a shift in one direction or the other may be threatening to life. This is a far better metaphor for international relations within a global space than the common realist conception of international relations in terms of, for instance, impenetrable billiard balls. Wendt, drawing on Karen Barad's (2007, 140) notion of "intra-action," argues that "who we become through measurements of each other is internal to our relationships—our entanglement—rather than something that happens outside of them" (172)[21]

Organisms cannot survive in isolation but are always dependent on their position within a group, although this relationship is not static but continuously performed. Wendt's worry that the organism metaphor is associated with fascism, while correct, arguably points to a particular kind of organism in a context of threat, which results in the hardening of "walls" that limit the permeability of the membrane, thereby limiting consciousness to the "inside" and ultimately threatening survival. The hardening of boundaries is characteristic of an unhealthy cell.

The Buddhist conception of compassion rests on far more permeable boundaries and a consciousness of entanglement. While also problematic at its extreme, entanglement, and flowing from this compassion, are vital to the existence of human social and political life. The Chinese "One Road, One Belt," while more open and "connective" than "America first,"

[21] Barad argues that due to uncertainty, the distinction between subjects and/or objectives becomes evident only at the moment of interaction; that is, it represents an intra-action by which each is formed by the other rather than engaging from the position of two intrinsic identities. Jenny Edkins (2003) made a similar argument with specific reference to international security, which, she argued, treats objects as independent of observation and as existing before they interact, based on a Newtonian cosmology that arose alongside forms of political community that led to the modern sovereign state.

is rightly a concern for many, particularly if the diversity and respect embedded in its articulation are not matched by practices on the ground. Leaders are instantiations in and of themselves, so contestation over who they should be and how they should act is important. Insofar as one might see some wisdom in Xi Jing's warning against being in a closed room with no air, the main point is not that the world should embrace China rather than the United States.[22] Unless China is assumed to be all powerful in its ability to impose its will on the region or the globe, then the "Silk Road" speech act initiates a framework of interaction that limits China's reach even while empowering it. Language instantiates and is entangled with practice in world; it does not stand outside it. The extent to which skeptical countries such as India or Vietnam enter into agreements along the Silk Road, enacting a consciousness of diversity, openness, and respect, or, alternatively, the extent to which they contest the absence of these qualities, will also impact on how the OBOR develops.

Beginning to conceptualize intra-global action and the importance of balance and interdependence between insides and outsides may provide an alternative way to think about globalization, as Western states begin to collapse inward. The constant fluctuations and transformations of global politics over the last 25 years, from the end of the Cold War, to the new liberal world order, to the War on Terror, to the recent resurgence of nationalist politics, highlights the uncertainty and lack of determinism at the heart of international politics, as well as the extent to which, as the physicist John Wheeler (Folger 2002) noted, we are all "participants" in constructing the universe. The frequent pull toward a realist politics of fear, not least because wave function collapse builds on patterns of the past, raises again the question of whether a quantum turn might open up a potential for disentangling past memories of trauma, displacement, and war from present practice, as well as the potential to

[22] Many would see this as dangerous, given China's own record in the area of human rights. It would look particularly ominous, I suspect, from the perspective of a Buddhist in Tibet.

step back from the current hardening of boundaries around specific communities, thereby allowing greater space to "breathe" in a continuous and more balanced global exchange.

The Implications for Social Science Practice

This brings us back to the implications of Wendt's argument for social-science research. While much of our day-to-day life can still be explained in Newtonian terms, "in a quantum world lots of things are possible that aren't in a classical one" (32). The question for social scientists should thus be one of when one set of assumptions or the other is more useful, given the problem at hand. Moving from the classical to the quantum is less a Kuhnian paradigm shift than it is like Wittgenstein's (1958, 194) duck/rabbit picture. The two are interdependent, although it is difficult to see them both at the same time. If we have, for the last few centuries, viewed the world as a duck, what happens when we shift our perception to look at it as a rabbit? Rather than falsifying classical physics, quantum physics expands the space within which the material world is viewed, making it possible to potentially resolve problems that otherwise seem intractable (155).

Wendt's analysis does raise ethical questions about how assumptions of rational utility maximization and egoism are used, given the tendency to reify these assumptions as reflecting "human nature," which fails to acknowledge the importance of entanglement and compassionate potentials. In this respect, the Dalai Lama's question (as quoted in Harrison and Davidson 2002, 82) is important:

> Maybe it's too early to say. Has science stopped evolving? [Western classical science] is a particular viewpoint based on a certain stage of history and evolution in human knowledge. . . In particular, I feel that science has not yet

> paid enough attention to the internal world [of consciousness] compared to the external. So maybe there is still a lot of ground to cover.

Inasmuch as quantum science has come full circle to reveal dimensions of the universe that were already present in Eastern wisdom and other ancient systems of thought, the story is not over. Quantum science has provided a clearer understanding of the physical basis of entanglement, but there is much to be learned from its family resemblance with Eastern wisdom, such as the need for more explicit attention to questions of consciousness, ethics, and language.

Wendt's point that language use, like observation in quantum theory, changes the object of measurement also has methodological implications. If social-scientific research is responsible, at the micro-level, for helping to "create, sustain and/or transform . . . reality (287), then any perception that we are getting closer to "truth" is more a reflection of the role of repeated measurements in stabilizing a certain reality than of their role in capturing an independently existing one (287). The insight goes back to Einstein, who claimed that the measurement on which the possibility of science depends does not occur with universal impartiality. It is a human act that is carried out from a particular point in time and space. The Copenhagen interpretation of quantum mechanics in the mid-1920s added to this the discovery that there is no precisely determinable objective universe; "that the universe exists only as a series of approximations. Only within the limits determined by our relationship with it. Only through understanding lodged inside the human head" (Frayn 1998, 59-60). From this perspective, the question of how language shapes reality must come sharply into view, including the ethical consequences of particular instantiations that may arise from its use.

The post-positivist challenge to conventional social science highlighted the power and control at the heart of "positivist" social science, and its attempt to hold the world in place,

which would seem to be an essential ingredient of any conception of global "order." If, however, human social and political life is ultimately uncertain, and in constant fluctuation, there may be something to learn from Sun Tzu, among others, about how we might more effectively bring the "life-force" to bear in embracing the uncertainty and working with oppositions, rather than trying to control them. The multi-perspectivalism of Einstein's relativity and of quantum theories of uncertainty and complementarity could also, in a globalizing world, pave the way for greater consciousness of the complementarity of East and West and, with it, an expansion of our horizons in dealing with seemingly intractable problems, from climate change to genocide and war.

REFERENCES

Barad, Karen. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning.* Durham, N.C.: Duke University Press.

Barnhart, Michael G. 1994. "Sunyata, Textualism and Incommensurability." *Philosophy East and West* 4 (4): 647-58.

Benn, James A. 2007. *Burning for the Buddha: Self-Immolation in Chinese Buddhism.* Honolulu: University of Hawai'i Press.

Bohr, Niels. 1961[2010]. *Atomic Physics and Human Knowledge.* New York: Dover.

Nasceta di Luigi Galvani, Bologna, Italy, October 1937," as cited in Graham Smetham 2010. *Quantum Buddhism: Dancing in Emptiness.* Shunyata Press.

Butler, Judith. 1993. *Bodies that Matter: On the Discursive Limits of Sex.* London: Routledge.

Chen, Wang. 1999. *The Tao of Peace: Lessons from Ancient China on the Dynamics of Conflict.* Trans. Ralph D. Sawyer. London: Shambala.

Chopra, Deepak. 1989. *Quantum Healing: Exploring the Frontiers of Mind/Body Medicine.* New York: Bantam Books.

Cudworth, Erika, and Stephen Hobden. 2011. *Posthuman International Relations: Complexity, Ecologism and Global Politics.* London: Zed Books.

Dalai Lama. 2013. "Dalai Lama Talks about Self-Immolation," *Phayul News* website, 26 March.

Dalai Lama. 2000. *Ancient Wisdom, Modern World: Ethics for a New Millennium*. London: Abacus.

Davidson, Richard, and Anne Harrington. 2002. *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature*. Oxford: Oxford University Press.

Daxinger, Lucia, and Emma Whitelaw. 2016. "Transgenerational Epigenetic Inheritance." *Genome Research*, accessed 28 June 2016.

Dietrich, Wolfgang. 2013. *Elicitive Conflict Transformation and the Transrational Shift in Peace Politics.* Basingstoke: Palgrave.

Edkins, Jenny. 2003. "Security, Cosmology, Copenhagen." *Contemporary Politics* 9(4): 361-70.

Easwaran, Eknath, trans. 1985. *The Bhagavad Gita*. London: Arkana.

Fierke, K. M. 2016. "Security as Ethics: An Orthogonal Rotation from Egoism to Compassion." In *Ethical Security Studies: A New Research Agenda*, ed. Jonna Nyman and Anthony Burke. London: Routledge.

Fierke, K. M. 2012. *Political Self-Sacrifice: Agency, Body and Emotion in International Relations.* Cambridge: Cambridge University Press.

Filk, Thomas. 2013. "Temporal Non-Locality." *Foundations of Physics* 43(4): 533-47.

Fisher, M.P.A. 2015. "Quantum Cognition." *Annals of Physics* 362: 593-602.

Folger, Tim. 2002. "Does the Universe Exist if We're Not Looking?" *Discover* 23(6): 44-49.

Frayn, Michael (1998) *Copenhagen*. Metheun Drama. See also the BBC production (2016).

Gapp, Katharina, Johannes Bohacek, Jonas Grossmann, Andrea M. Brunner, Francesca

Manuella, Paolo Nanni, and Isabelle M Mansuy. 2016. "Potential of Environment Enrichment to Prevent Transgeneration Effects of Paternal Trauma." *Neuropsychopharmacology* 2016: 1-10.

Garfield, Jay, trans. 1995. *The Fundamental Wisdom of the Middle Way: Nagarjuna's* Mulamadhyamakakarika. Oxford: Oxford University Press.

Hanh, Thich Nhat. 1967. *Vietnam: The Lotus in the Sea of Fire.* London: SCM Press.

Hellinger, B. 1999. *Acknowledging What Is.* Phoenix: Zeig, Tucker and Theisen.

Jablonka, E., and G. Ray. 2009. "Transgenerational Epigenetic Inheritance." *Quarterly Review of Biology* 84(2).

Jerryson, Michael, and Mark Juergensmeyer. 2010. *Buddhist Warfare.* Oxford: Oxford University Press.

Kabat-Zinn, Jon. 2005. *Coming to Our Senses: Healing Ourselves and the World Through Mindfulness.* London: Piatkus.

Kovan, Martin. 2014. "Thresholds of Transcendence: Buddhist Self-Immolation and Mahayanist Absolute Altruism." *Journal of Buddhist Ethics* 21.

Kronos, J. R. Svinth. 2002. "A Chronological History of the Martial Arts and Combative Sports." http://ejmas.com/kronos/index.html

Mackay, Nikki. 2012. *Between the Lines: Healing the Individual and Ancestral Soul with Family Constellation.* O-Books.

Omnes, Roland. 1999. *Quantum Philosophy: Understanding and Interpreting Contemporary Science.* Princeton: Princeton University Press.

Oschman, James L. 2016. *Energy Medicine.* Amsterdam: Elsevier.

Perrett, Ray. 2002. "Personal Identity, Minimalism and Madhyamaka." *Philosophy East and West* 52(3): 373-85.

Phillips, Tom. 2017. "If Xi's Our Saviour, Then We Are All in Trouble." *The Guardian,* 11 February.

Planck, Max. 1944. “Das Wesen der Materie.” *Archiv zur Geschichte der Max-Planck-Gesellschaft,* Abt.Va., Rep. II Planck, Nr. 1797.

Priest, Graham. 2009. “The Structure of Emptiness.” *Philosophy East and West* 59(4): 467-80.

Rinpoche, Sogyal. 2002. *The Tibetan Book of Living and Dying*. London: Ryder.

Sawyer, Ralph. 2007. *The Tao of Deception: Unorthodox Warfare in Historical and Modern China.* New York: Basic Books.

Sawyer, Ralph. 1993. *The Seven Military Classics of Ancient China.* New York: Basic Books.

Splinter, Dirk and Llubyana Wustehube. 2011. “Discovering Hidden Dynamics: Applying Systemic Constellation Work to Ethnopolitical Conflict.” In *The Non-Linearity of Peace Processes: Theory and Practice of Systemic Conflict Transformation,* ed. Daniela Korppen, Norbert Ropers and Hans J. Giessmann. Opladen & Farmington Hills, MI: Verlag Barbara Budrich, pp. 111-128.Wang, Robin. 2012. *Yinyang.* Cambridge: Cambridge University Press.

Wendt, Alexander. 2015. *Quantum Mind and Social Science.* Cambridge: Cambridge University Press.

Wittgenstein, Ludwig 1958. *Philosophical Investigations.* London: Basil Blackwell.